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Patent Number: JP63090833
Publication date: 1988-04-21
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Requested Patent: JP63090833
Application Number: JP19860236533 19861003
Priority Number(s):
IPC Classification: H01L21/365
EC Classification:
EC Classification:
Equivalents:

Abstract

PURPOSE: To obtain a thin film of high quality at lower temperature than a conventional one at a high growing velocity thereby to be able to largely reduce a growing time by a gas source ALE method by using one or more types of H₂S₂, H₂S₃, H₂S₄ as compound gas containing group VI element.

CONSTITUTION: When one or more types of compound gas containing group II element and one or more types of compound gas containing group VI element are simultaneously or alternately introduced onto a substrate to form a thin compound film made of the group II and VI elements, one or more of H₂S₂, H₂S₃, H₂S₄ are used as compound gas containing group VI element. For example, zinc diethyl 13 is used as the group II source, H₂S₂ 15 is used as group VI source, and a ZnS film is formed by a gas source ALE method on a crystalline substrate 9 of GaAs or Si or an amorphous substrate made of glass. Since H₂S₂, H₂S₃, H₂S₄ called 'hydrogen polysulfide' feasibly radiate sulfur by heating or light irradiating, they are used as sulfur supply gas source to obtain a thin film of high quality at lower temperature than a conventional one at a high growing velocity.